Listing of Claims:

1. (CURRENTLY AMENDED) A color imaging system for compensating a color response, the system comprising:

an array of pixel sensor elements;

a color filter including a plurality of color filter components organized in a predefined pattern, the color filter overlaying at least a portion of the array, wherein said pixel sensor elements include at least one element associated with a first color filter component, at least one element associated with a second color filter component, and at least one element associated with a third color filter component;

a first analog compensation unit coupled to the at least one element associated with the first color filter component, said first analog compensation unit adapted to modify a readout of the at least one element associated with the first color filter component, wherein said first analog compensation unit provides color interpolation, on-the-fly color compensation, and/or fixed pattern noise reduction;

a second analog compensation unit coupled to the at least one element associated with the second color filter component, said second analog compensation unit adapted to modify a readout of the at least one element associated with the second color filter component, wherein said second analog compensation unit provides color interpolation, on-the-fly color compensation, and/or fixed pattern noise reduction;

an analog summing amplifier coupled to two elements associated with the third color filter component and outputting an analog sum of said two elements;

a third analog compensation unit coupled to said analog sum, said third analog compensation unit adapted to modify a readout of said analog sum, wherein said third analog compensation unit provides color interpolation, on-the-fly color compensation, and/or fixed pattern noise reduction; and

an array controller adapted to control the readout of the elements associated with the first, second and third color components wherein said array controller directs said readout of said first, second, and third color filter components in a selected window of said array while other sections of said array are not processed and wherein said array controller simultaneously reads a 2x2 pixel block, which need not be a Bayer matrix, from two adjacent columns and two adjacent rows of said array, and wherein no white balance amplifiers or white balance controllers are used in said color imaging system.

2. (CANCELLED)

3. (ORIGINAL) The system of Claim 1, wherein at least a portion of the array elements arranged in a plurality of rows and columns.

4. (ORIGINAL) The system of Claim 1, wherein the array controller is adapted to control the readout of a plurality of pixel sensor elements in parallel.

5. (CANCELLED)

6. (ORIGINAL) The system of Claim 1, wherein the analog compensation units are gain amplifiers.

7. (ORIGINAL) The system of Claim 1, wherein the analog compensation units are programmable gain amplifiers.

8. (ORIGINAL) The system of Claim 7, wherein the programmable gain amplifiers are implemented as a separate stage.

9. (ORIGINAL) The system of Claim 7, wherein the programmable gain amplifiers are contained within a pixel circuitry of the array.

10. (ORIGINAL) The system of Claim 7, wherein the programmable gain amplifiers are within a plurality of column buffers.

11. (CANCELLED)

12. (ORIGINAL) The system of Claim 1, wherein the color filter components include the colors of red, blue and green.

13. (PREVIOUSLY PRESENTED) The system of Claim 1, wherein the array controller causes an independent readout for a set of even-numbered rows and an independent readout for a set of odd-numbered rows to control color compensation for each color component.

14. (ORIGINAL) The system of Claim 1, wherein the array controller causes an independent readout for even-numbered columns and an independent readout for odd-numbered columns to control color compensation.

15. (ORIGINAL) The system of Claim 1, wherein the array controller causes a plurality of substantially simultaneous, independent readouts for a plurality of rows and some columns.

16. (PREVIOUSLY PRESENTED) The system of Claim 1, wherein the pixel sensor elements form a portion of a charge coupled device.

17. (ORIGINAL) The system of Claim 1, wherein the pixel sensor elements form a portion of a complementary metal oxide semiconductor device.

18. (ORIGINAL) The system of Claim 1, wherein at least a portion of the pixel sensor elements are active.

19. (ORIGINAL) The system of Claim 1, wherein at least a portion of the pixel sensor elements are passive.

20. (ORIGINAL) The system of Claim 1, wherein at least a first pixel sensor element is associated with a different color filter component than a second, neighboring pixel sensor element.

21. (CANCELLED)

22. (ORIGINAL) The system of Claim 1, wherein the predefined pattern comprises the colors of yellow, cyan and magenta.

23. (ORIGINAL) The system of Claim 1, further comprising a micro-lenses layer.

24. (CANCELLED)

25. (CANCELLED)

26. (CURRENTLY AMENDED) A method of compensating a color response in an analog domain of an array of pixel sensor elements, the method comprising:

amplifying an analog output from a plurality of elements of a first color component;

amplifying an analog output from a plurality of elements of a second color component wherein two said element outputs are summed together prior to said amplifying; and

generating a compensated analog readout of the plurality of elements of the first color component, wherein said compensated analog readout provides color interpolation, on-the-fly color compensation, and/or fixed pattern noise reduction, and wherein only a selected window of said array is processed while other sections of said array are not processed and wherein a 2x2 pixel block, which need not be a Bayer matrix, from two adjacent columns and two adjacent rows of said array is simultaneously read, wherein no white balance amplifiers or white balance controllers are used in said method of compensating a color response.

27. (CANCELLED)

28. (ORIGINAL) The method of Claim 26, wherein the act of generating a compensated analog readout comprises amplifying the analog readout for the plurality of elements of the first color component with a first programmable gain amplifier.

29. (ORIGINAL) The method of Claim 26, further comprising determining an optimum level of color compensation for the analog readout of the plurality of elements of the first color component.

30. (ORIGINAL) The method of Claim 26, wherein generating a compensated analog readout depends on a temperature of the system.

31. (ORIGINAL) The method of Claim 26, wherein the pixel sensor elements are associated with the colors of red, blue and green.

32. (ORIGINAL) The method of Claim 31, wherein the array of pixel sensor elements is arranged in a plurality of rows and columns and the act of generating comprises:

generating an independent readout for even-numbered rows;

generating an independent readout for odd-numbered rows;

generating an independent readout for even-numbered columns; and

generating an independent readout for odd-numbered columns, such that at least one element associated with a red filter component is coupled to a first programmable gain amplifier, at least one element associated with a blue filter component is coupled to a second programmable gain amplifier, and at least one element associated with a green filter component is coupled to a third programmable gain amplifier.

33. (ORIGINAL) The method of Claim 26, wherein the act of generating comprises generating a plurality of substantially simultaneous, independent readouts for the set of rows and the set of columns.

34. (CANCELLED)

35. (CURRENTLY AMENDED) A color imager comprising:

a set of sensor elements, wherein at least one of said elements is associated with a first color, at least one of said elements is associated with a second color, and at least two of said elements are associated with a third color;

a first amplifier configured to compensate for said first color, by providing color interpolation, on-the-fly color compensation, and/or fixed pattern noise reduction;

a second amplifier configured to compensate for said second color, by providing color interpolation, on-the-fly color compensation, and/or fixed pattern noise reduction;

an analog summing amplifier coupled to said two elements associated with said third color and outputting an analog sum of said two elements;

a third amplifier configured to compensate for said third color by providing color interpolation, on-the-fly color compensation, and/or fixed pattern noise reduction; and

an array controller which selectively couples elements associated with the first color to the first amplifier, said array controller selectively couples elements associated with the second color to the second amplifier, and said array controller selectively couples elements associated with the ~~first~~ third color to the third amplifier wherein said array controller directs said readout of said first, second, and third color sensor elements

in a selected window of said array while other sections of said array are not processed and wherein said array controller simultaneously reads a 2x2 pixel block, which need not be a Bayer matrix, from two adjacent columns and two adjacent rows of said array, and wherein no white balance amplifiers or white balance controllers are used in said color imager.

36. (ORIGINAL) The color imager of Claim 35, wherein the sensor elements are arranged in rows and columns.

37. (CANCELLED)

38. (CANCELLED)

39. (CURRENTLY AMENDED) A method of interpolating a color value in the analog domain in realtime, comprising:

modifying a first analog signal corresponding to the output of a first pixel element in an imager by color interpolation, on-the-fly color compensation, and/or fixed pattern noise reduction of said first analog signal to color correct the first pixel, the first pixel element used to sense light intensity of a first color; and

modifying a second analog signal corresponding to the output of a second and a third pixel element in the imager by color interpolation, on-the-fly color compensation, and/or fixed pattern noise reduction of said second analog signal to color correct the second and third pixels, wherein the second and third pixel elements are used to sense

light intensity of a second color and wherein said second analog signal is a sum of said second and third pixel elements and wherein a 2x2 pixel block, which need not be a Bayer matrix, from two adjacent columns and two adjacent rows of said array is simultaneously read, and wherein no white balance amplifiers or white balance controllers are used in said method of interpolating a color value.

40. (ORIGINAL) The method as defined in Claim 39, further comprising modifying a third analog signal corresponding to the output of a third pixel element in the imager to color correct the third pixel.